

MODIS Atmosphere Group

- Response to SBRC regarding MODIS bandpass specs
 - Considered recommended changes band by band
 - Tentative assessment (based solely on telluric bands) accepts some changes with little difficulty, rejects others as too severe for science objectives
 - Major concerns
 - bands 1 (O₂ B-band), 15 (O₂ A-band), 17-19 (H₂O bands)
- Product list update
 - Action item to team members to update and return

MODIS Airborne Simulator

<i>Channels</i>	50
<i>Footprint</i>	2.5 mrad
	45 m
<i>Swath</i>	$\pm 43^\circ$
	34 km
<i>Spectral range</i>	0.55-14.2 μm
<i>Scan rate</i>	6.25 scans/sec
<i>Pixels in scan line</i>	716
<i>Data system</i>	12 channels – 8 bit

MODIS Airborne Simulator

- MAS was delivered to Ames on October 15 where it was integrated, calibrated, and flown in the FIRE Cirrus Experiment which began November 12.
 - 11 flights during cirrus experiment.
 - 3 flights thus far processed through Level-1B processing system (SDST).
 - Engineering assessment of instrument performance conducted to examine temperature sensitivity to calibration gain, rms noise by channel, and absolute calibration of 6 thermal infrared channels.

MODIS Airborne Simulator

- After FIRE campaign, the *MAS* was returned to Dædalus where it is currently being modified to a full 50 channel spectrometer for use in ASTEX, TOGA-COARE, Brazil, and later airborne field campaigns.
- Output Level-1B data will be produced by MODIS SDST and distributed in the netCDF format by anonymous FTP or 8 mm (Exabyte) cassette.
- Enhanced 50 channel, 12-16 bit data system discussed and viewed as an important near future development.

MAS - Flight Line #8 05 Dec. 1991 1535-1541GMT

0.67 μ m

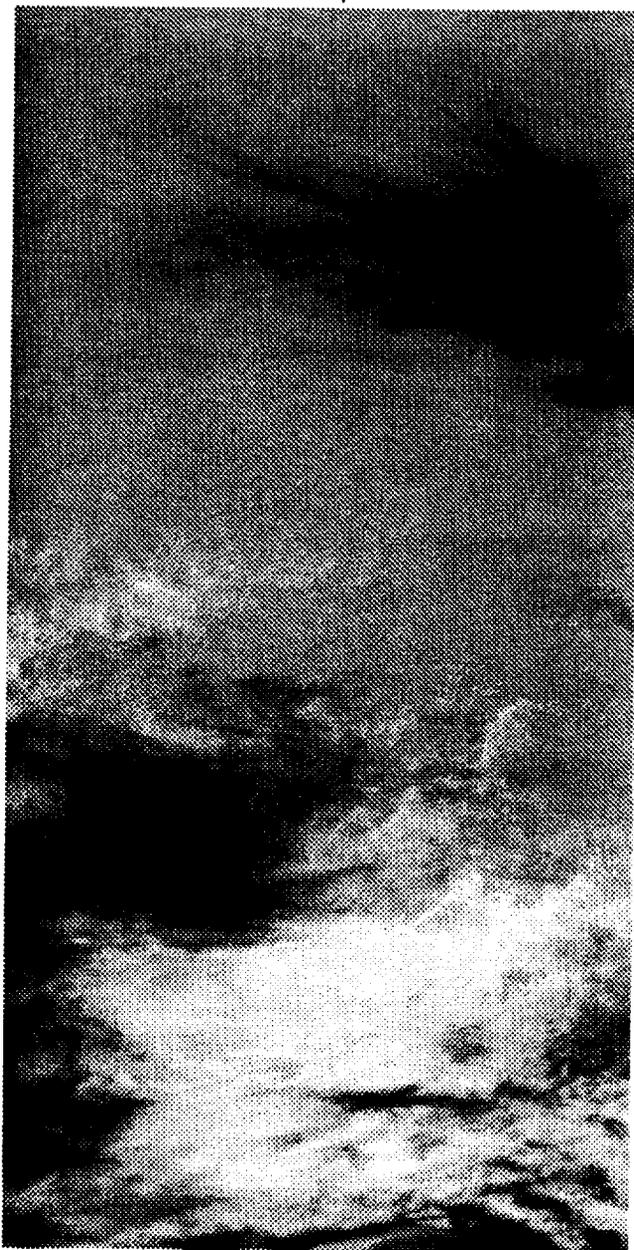


1.64 μ m

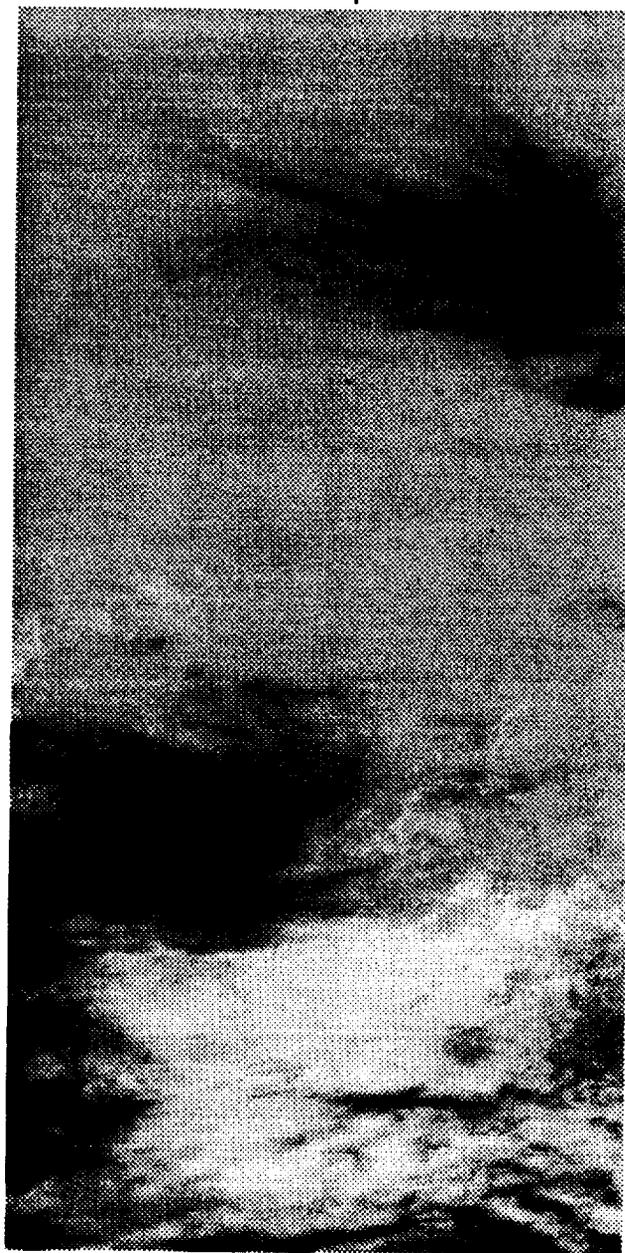


MAS - Flight Line #8 05 Dec. 1991 1535-1541GMT

8.80 μm

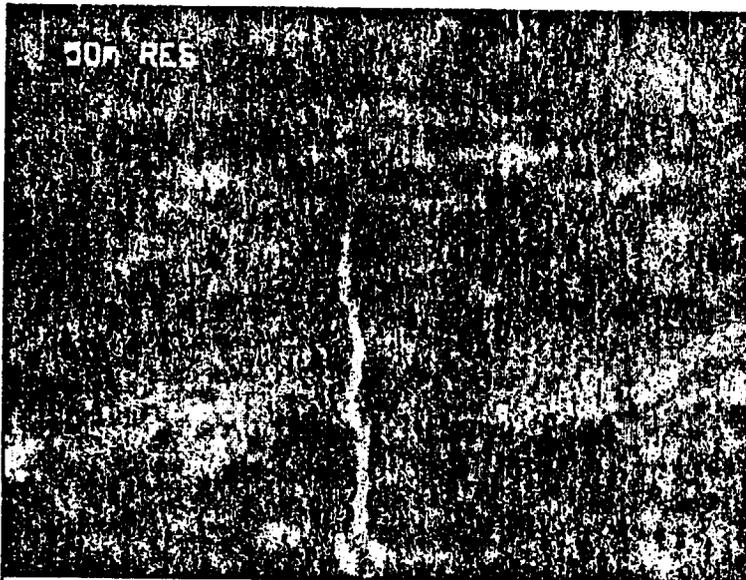


11.95 μm

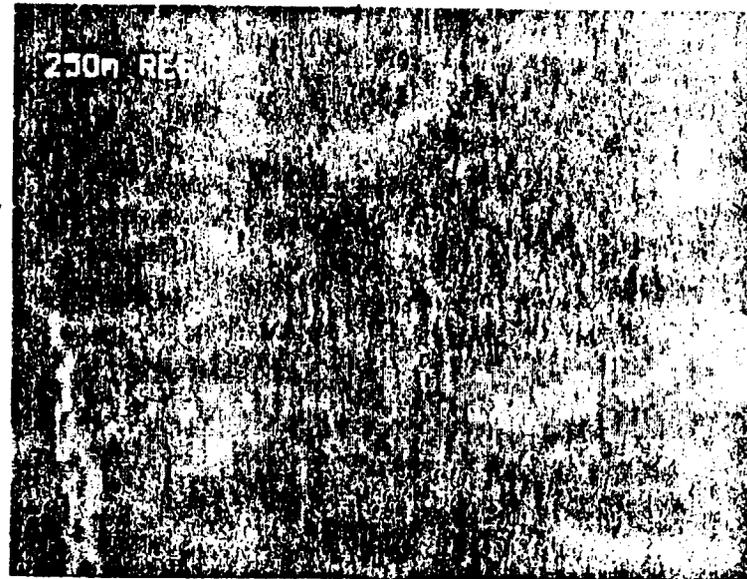


Airborne Field Campaigns (FY92-96)

- *FIRE Cirrus IFO (Coffeyville, KS) - November 1991*
- *MAS Science/Engineering Flights (20 hrs/year)*
- *ASTEX (Azores, Portugal) - June 1992*
- *TOGA-COARE (Townsville, Australia) - January 1993*
- *Biomass Burning (Brazil) - September 1993*



50m RES

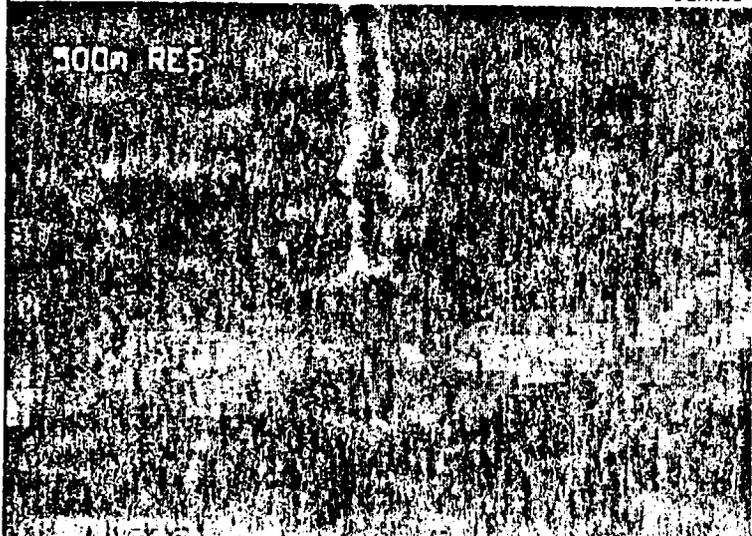


250m RES

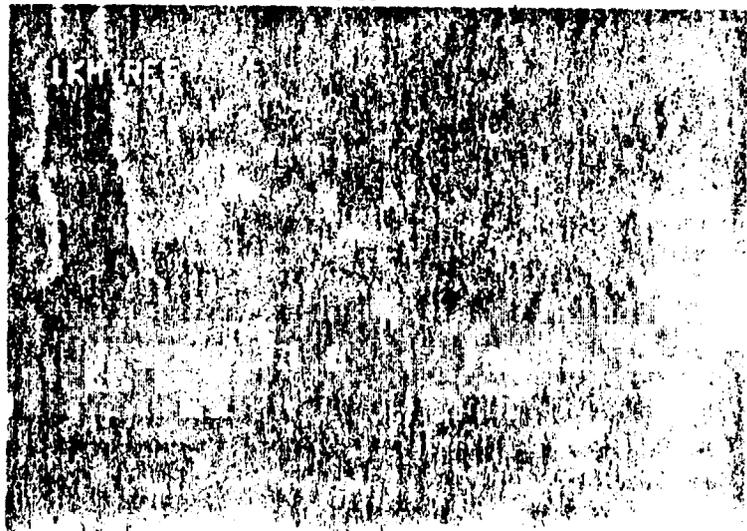
5 DEC 1991

CIRRUS OVER LAND

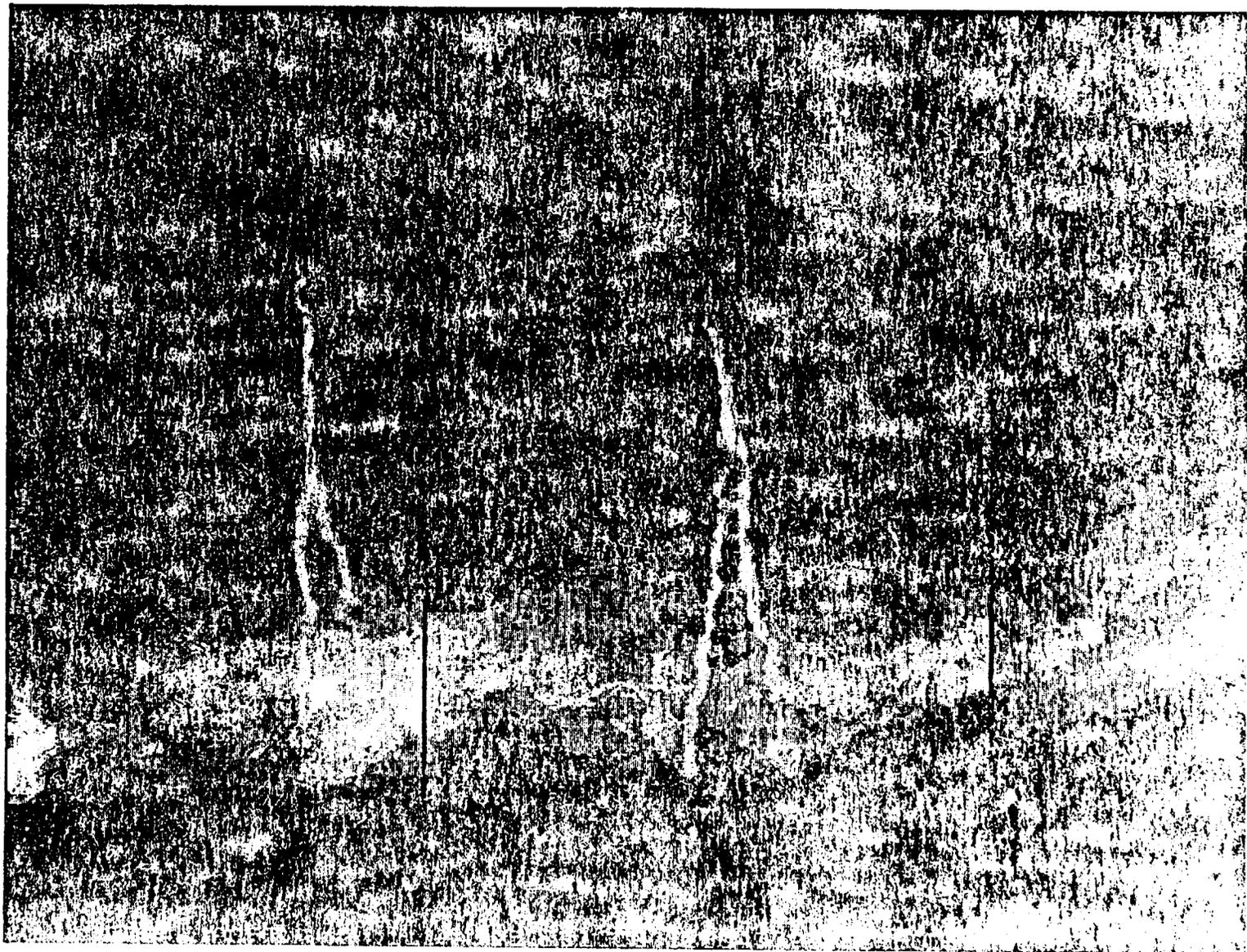
BAND 11



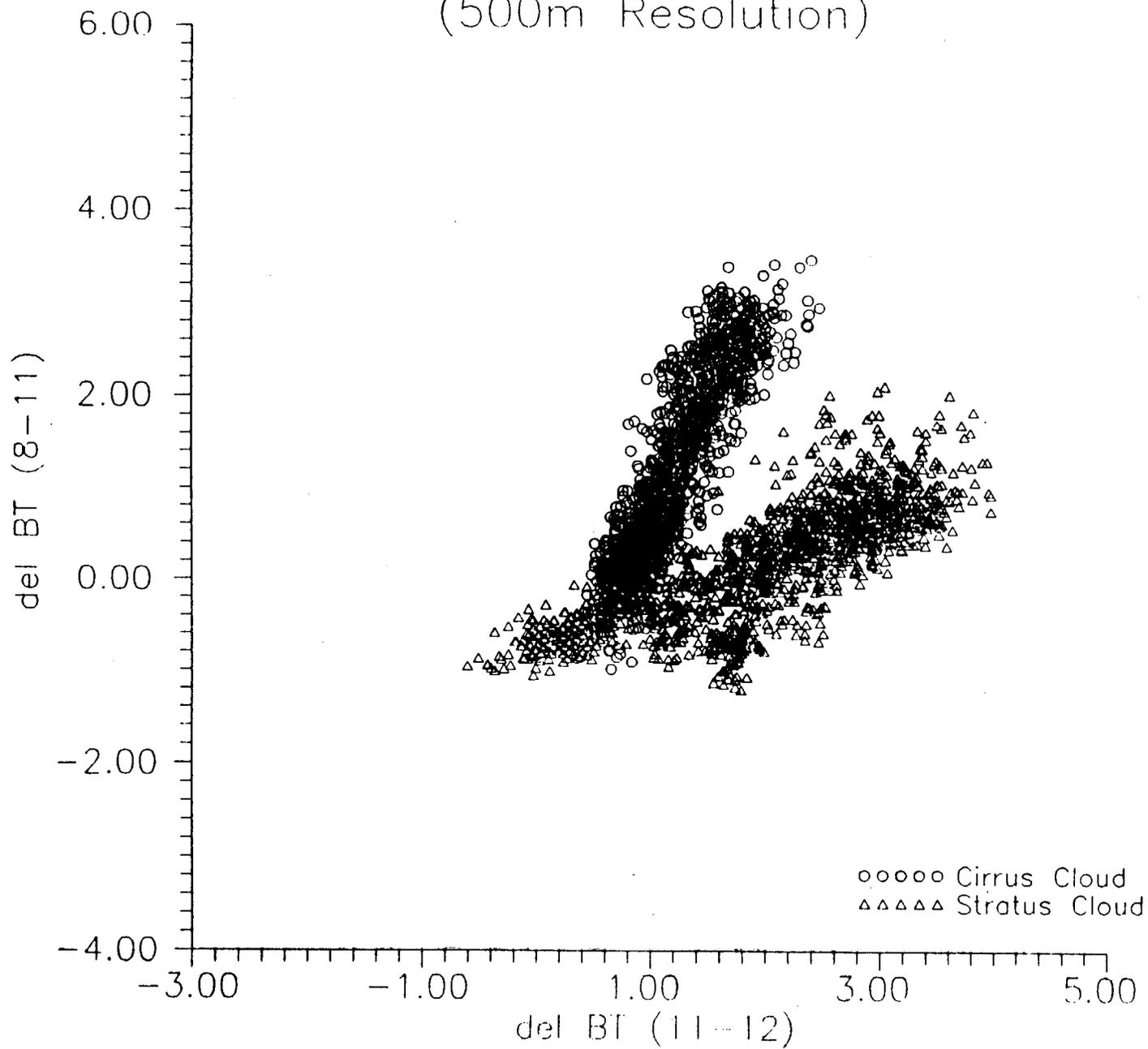
500m RES



1km RES



Brightness Temp. Differences (10bit)
(500m Resolution)



MAS Instrument Performance

Noise in the six thermal channels
over uniform scene in the Gulf of Mexico

microns	rms deg C
3.75	1.7
4.5	0.6
4.65	0.8
8.8	0.3
10.95	0.4
11.95	0.7

Biases (measured minus truth) in the six thermal channels
from ice bucket calibration

microns	diff deg C
3.75	1.0
4.5	1.3
4.65	1.3
8.8	0.7
10.95	0.1
11.95	0.4

Typical Inflight gain (radiance per count)

microns	dr/dc (mW/m ² /ster/cm-1/count)
3.75	6.6 E-3
4.5	2.3 E-2
4.65	1.7 E-2
8.8	.30
10.95	.50
11.95	.45

Changes of 10 to 20% were recorded as instrument temperature
dropped from 240 K to 230 K inflight; this made dynamic range
adjustments somewhat hit or miss

Overall the instrument performance was excellent, given the short
amount of preparation time

MODIS Algorithm Status

- Menzel has provided update of the status of his software development, including approach, algorithm, software status, and estimated availability.
- Other members not yet crystalized availability status.
- For many in the atmosphere discipline group, *MAS* and other aircraft and ground-based field observations are required to test algorithms over a large number of different environments.
- Candidate Level-2 software will be provided to SDST as available and tested so that these routines can be incorporated into *MAS* data processing.